

## CLAIMS

1. A process for forming a solder mask, comprising:  
coating a photoimageable ink on a carrier film to form a photoimageable ink layer on said carrier film;  
drying said photoimageable ink layer to form a photoimageable resist layer, thereby forming at least one photoimageable resist layer bearing film;  
laminating said photoimageable resist layer bearing film on at least one side of a substrate so as to bring the upper surface of said photoimageable resist layer into contact with said substrate;  
exposing said photoimageable resist layer to light through said carrier film to form an exposed resist layer;  
removing said carrier film from said exposed resist layer;  
developing said exposed resist layer to form a developed resist layer; and  
curing said developed resist layer to form a solder mask on said substrate.
2. The process for forming a solder mask as claimed in claim 1, wherein said photoimageable resist layer is in the shape of a continuous layer.
3. The process for forming a solder mask as claimed in claim 1, wherein said photoimageable resist layer comprises a plurality of separate photoimageable resist layer portions.
4. The process for forming a solder mask as claimed in claim 1, wherein said photoimageable resist layer bearing film comprises a plurality of photoimageable resist layer bearing film portions, and said photoimageable resist layer comprises a plurality of separate

photoimageable resist layer portions, each of said photoimageable resist layer bearing film portions bearing thereon at least one said photoimageable resist layer portion.

5. The process for forming a solder mask as claimed in claim 4, further comprising:  
cutting said photoimageable resist layer bearing film into a plurality of said photoimageable resist layer bearing film portions so as to have each of said photoimageable resist layer bearing film portions bear thereon at least one of said separate photoimageable resist layer portions prior to the step of laminating said photoimageable resist layer bearing film on at least one side of said substrate.

6. The process for forming a solder mask as claimed in claim 4, wherein in the step of laminating said photoimageable resist layer bearing film on at least one side of a substrate, said photoimageable resist layer bearing film portion is laminated on at least one side of said substrate so as to bring the upper surface of at least one of said photoimageable resist layer portions into contact with said substrate.

7. The process for forming a solder mask as claimed in claim 4, further comprising:  
folding into two a leading edge portion of said photoimageable resist layer bearing film so as to have said substrate sandwiched between said photoimageable resist layer portions of at least one pair of said photoimageable resist layer bearing film portions, prior to the step of laminating said photoimageable resist layer bearing film on said substrate.

8. The process for forming a solder mask as claimed in claim 7, further comprising:

tacking to said substrate at least one portion of said photoimageable resist layer portions in said folded leading edge portion of said photoimageable resist layer bearing film, prior to the step of laminating said photoimageable resist layer bearing film on said substrate.

9. The process for forming a solder mask as claimed in claim 8, further comprising: cutting off said folded leading edge portion while said substrate is sandwiched between said photoimageable resist layer portions of at least one pair of said photoimageable resist layer bearing film portions and at least one portion of said photoimageable resist layer portions is tacked to said substrate, prior to the step of laminating said photoimageable resist layer bearing film on said substrate.

10. The process for forming a solder mask as claimed in claim 4, further comprising: interposing said substrate between a pair of said photoimageable resist layer bearing portions so as to bring at least one of said photoimageable resist layer portions born by said photoimageable resist layer bearing portions into contact with at least one side of said substrate, prior to the step of laminating said photoimageable resist layer bearing film on said substrate.

11. The process for forming a solder mask as claimed in claim 10, further comprising:

tacking to said substrate at least one portion of said photoimageable resist layer portions while said substrate is interposed between said pair of said photoimageable resist layer bearing portions, prior to the step of laminating said photoimageable resist layer bearing film on said substrate.

12. The process for forming a solder mask as claimed in claim 11, further comprising:

cutting off said pair of said photoimageable resist layer bearing portions while said substrate is sandwiched between said photoimageable resist layer portions of at least one pair of said photoimageable resist layer bearing film portions and at least one portion of said photoimageable resist layer portions is tacked to said substrate, prior to the step of laminating said photoimageable resist layer bearing film on said substrate.

13. The process for forming a solder mask as claimed in claim 1, wherein said substrate is a rigid substrate.

14. The process for forming a solder mask as claimed in claim 13, wherein said rigid substrate is a rigid printed circuit board before said solder mask is formed thereon.

15. The process for forming a solder mask as claimed in claim 1, wherein said substrate is a flexible substrate.

16. The process for forming a solder mask as claimed in claim 15, wherein said flexible substrate is a flexible printed circuit board before said solder mask is formed thereon.

17. The process for forming a solder mask as claimed in claim 1, wherein said substrate is an internal dielectric layer provided with an electric-circuit pattern.

18. An apparatus for forming a solder mask, comprising:

means for coating a photoimageable ink on a carrier film to form a photoimageable ink layer on said carrier film;

means for drying said photoimageable ink layer to form a photoimageable resist layer, thereby forming at least one photoimageable resist layer bearing film;

means for laminating said photoimageable resist layer bearing film on at least one side of a substrate so as to bring the upper surface of said photoimageable resist layer into contact with said substrate;

means for exposing said photoimageable resist layer to light through said carrier film to form an exposed resist layer;

means for removing said carrier film from said exposed resist layer;

means for developing said exposed resist layer to form a developed resist layer; and

means for curing said developed resist layer to form a solder mask on said substrate.

19. A process for forming an internal dielectric layer provided with an electric-circuit pattern, comprising:

coating a dielectric material ink on a carrier film to form a dielectric material ink layer on said carrier film;

drying said dielectric material ink layer to form a dielectric material layer, thereby forming at least one dielectric layer bearing film;

laminating said dielectric material layer bearing film on at least one side of a substrate so as to bring the upper surface of said dielectric material layer into contact with said substrate;

thermally curing said dielectric material layer to form a cured dielectric material layer, removing said carrier film from said cured dielectric material layer;

subjecting said cured dielectric material layer to laser drilling to form a laser-drilled cured dielectric material layer with a drilled electric-circuit pattern;

subjecting said laser-drilled cured dielectric material layer to desmear etching; and

plating said laser-drilled cured dielectric material layer with an electroconductive material, thereby forming an internal dielectric layer provided with an electric-circuit pattern.

20. The process for forming an internal dielectric layer provided with an electric-circuit pattern as claimed in Claim 1, wherein said electroconductive material is copper.

21. An apparatus for forming a solder mask, comprising:

a coater with which a photoimageable ink is to be coated on a carrier film to form a photoimageable ink layer on said carrier film;

a dryer configured to dry said photoimageable ink layer to form a photoimageable resist layer, thereby forming at least one photoimageable resist layer bearing film;

a laminating device with which said photoimageable resist layer bearing film is to be laminated on at least one side of a substrate so as to bring the upper surface of said photoimageable resist layer into contact with said substrate;

an exposing unit configured to expose said photoimageable resist layer to light through said carrier film to form an exposed resist layer;

a remover with which said carrier film is to be removed from said exposed resist layer;

a developing unit configured to develop said exposed resist layer to form a developed resist layer; and

a curing unit configured to cure said developed resist layer to form a solder mask on said substrate.